

Our Public Lands



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Summer 1981

FIRE MANAGEMENT
Today and Tomorrow

See page 12

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U.S. DEPARTMENT OF THE
INTERIOR

BUREAU OF LAND MANAGEMENT

As the Nation's principal conservation agency, the Department of the Interior has basic responsibility for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of America's "Department of Natural Resources."

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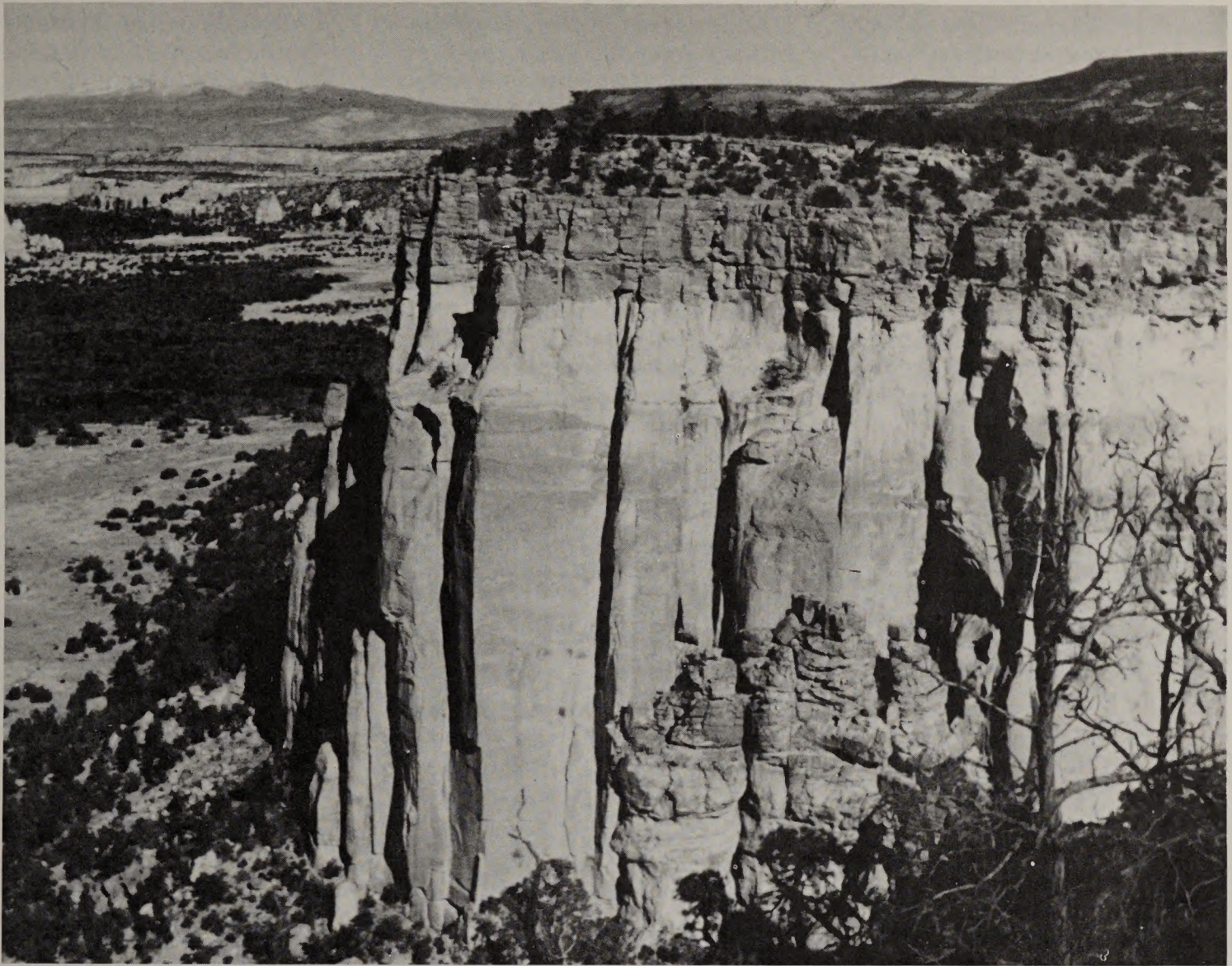
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“I love hiking through the Malpais. It’s barren and seems to have its own personality. . . a black desert. I get a feeling of immenseness about it—that there is something there beyond just the rock itself. It has a kind of soul. It is unique. . . islands of ponderosa pine. Trees just growing on solid rock where you figure nothing would be able to grow. The twisted pines that grow through the lava, the distorted bonsai or dwarf species. The legends out there—legends related to the rocks. The place has a life of its own. I’ll sit on the Sandstone Bluffs Overlook, and I feel that I’m drawn into the Malpais, that I *have* to go in there.”

—BLM Geologist

El Malpais

Continued on page 4

In west-central New Mexico, south of the city of Grants lies one of the most outstanding examples of volcanic landscape in the continental United States—El Malpais.

The lava field and neighboring public lands include 84,000 acres of cinder cones, lava tubes, ice caves, sculptured sandstone formations and pine forests—a beautiful, if chaotically jumbled piece of wild America protected and preserved in its natural condition since 1974.

Administered by the Bureau of

years ago the area in the vicinity of El Malpais was inhabited by Paleo Indians. A large population of permanent village dwellers settled the area from about 800 A.D. to 1400 A.D. These ancestors of modern Pueblo Indians were known as Anasazi, from the Navajo word meaning “the ancient ones.” In the fertile valleys adjacent to the lava field, these agricultural people grew corn, squash and beans. They also crafted exquisitely beautiful pottery with intricate black and white geometric designs. The years

eastward from Zuni Pueblo. When Alvarado crossed El Malpais he found it to be a great impediment to travel and he made emphatic remarks on the roughness of the terrain. Traveling 75 miles, they arrived at Acoma Pueblo. Coronado and his main party skirted the lava, as did subsequent Spanish expeditions and the later American explorers and settlers.

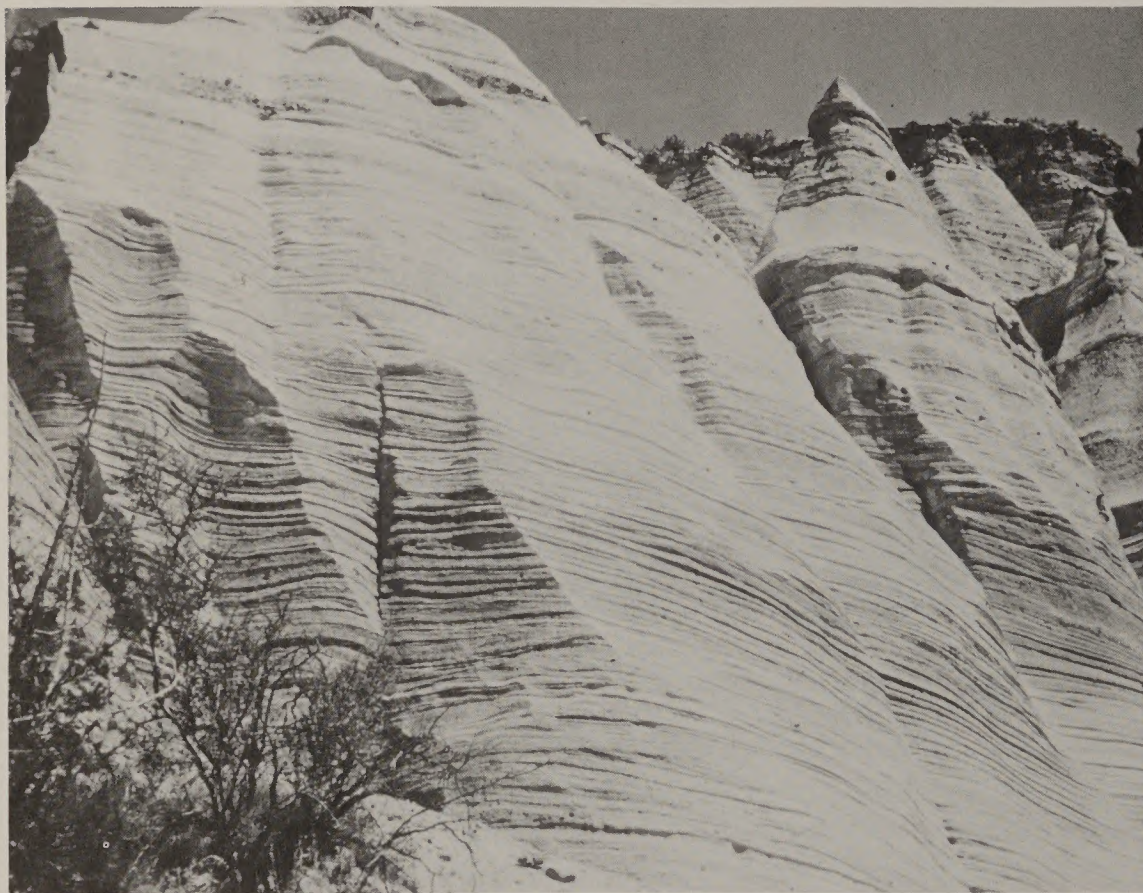
Raiding by Navajos was a problem in the area until after the Civil War when Army troops and volunteers, under the command of Kit Carson, defeated the Navajo at Canyon de Chelly. This defeat almost completely ended the threat of raids. The area was then homesteaded and ranching rapidly became an important activity. Sheep, which had been introduced into the area during the Spanish Colonial period, became the primary grazing animal in El Malpais. With the increase of sheep ranching, Navajo herders were employed and many eventually settled in the area.

In the late 1800's cattle operations began to expand in the vicinity of El Malpais. A major factor in the growth of cattle ranching was the influence of the Mormon Church. Missions were established in western New Mexico and these assisted in expanding cattle ranching operations. Ranching has continued to be an important activity in the region and is still a major economic factor.

At the Sandstone Bluffs Overlook you can experience the awesome expanse of El Malpais. Here the sky, sandstone and lava meet.

The Overlook is part of the sandstone and rimrock country of Cebollita Mesa that defines the eastern boundary of the lava field. The delicately colored sandstone formations have been shaped by wind and water into monumental forms. The largest natural arch in New Mexico and other smaller arches can be seen among the cliffs. Some of these cliffs rise 500 feet in smooth, unbroken faces, while others have weathered into a maze of amphitheaters and columns.

From the Overlook you can also see a series of distinct volcanic cinder cones looming above the ponderosa pine and pinyon-



Land Management, El Malpais (the badlands) is the historic Spanish name given to the lava field, and in view of the brutally rugged nature of the terrain it is an accurate description. This type of recent volcanic topography can be compared with that found in Hawaii and Japan. El Malpais consists of four distinct lava flows which were spewed over McCarty's Valley within the last 3,000 years. Based upon archaeological evidence, the most recent flows have been dated at less than one thousand years in age and Indian legends tell of a river of fire covering fields their ancestors tilled.

About eight to twelve thousand

between 1200 A.D. and 1400 A.D. represent the high point of cultural development with the construction of large fortified towns on mesa tops to the east of El Malpais. One of these is Acoma Pueblo, located 30 miles from the lava field. Part of the Acoma Indian Reservation, Acoma Pueblo is considered one of the oldest continually inhabited settlements in the United States.

The first Europeans known to traverse El Malpais were Captain Hernando de Alvarado and his companion, Fray Juan Padilla, in the year 1540. Along with a body of soldiers, animals and provisions, they were sent by Spanish Conquistador Coronado to explore

juniper woodlands west of the lava field. Collectively known as the Chain of Craters, these huge, symmetrical cinder cones stretch 20 miles from Bandera Crater southwest to Cerro Brillante. Bandera Crater is the largest cinder cone in El Malpais and is one of several tourist attractions to be seen at Ice Caves Resort. This is a privately owned commercial operation where, for a fee, you can hike up



Bandera Crater, see an ice cave and other related volcanic features.

Between Cebollita Mesa and the Chain of Craters is the extensive lava field called El Malpais. Blanketed by a series of relatively recent lava flows, El Malpais contains a large number of beautiful volcanic features including some of the largest and most extensive lava tubes in the United States. Lava tubes, perhaps the most fascinating geologic phenomenon of El Malpais, were formed when the outer surface of a lava flow would cool and solidify over a flowing river of

molten lava. Tunnel-like caves were left when the lava river drained. At least eight lava tube systems occur in El Malpais, most of which are concentrated in the northwest portion of the area. Some of these volcanic structures are greater than 50 feet in diameter and are known to extend several miles in length. Several of the wider tubes have collapsed leaving narrow sections of roof forming impressive natural arches. Ice caves occur in a few of the lava tubes which are collapsed and sealed at



one end. They contain delicate ice crystal ceilings, ice stalagmites and ice-rink-like floors kept intact by the relatively constant underground temperatures.

El Malpais is also one of the most unique areas in New Mexico for wildlife habitat, varying from bare rock to ponderosa forests. Here, one can find a wide spectrum of wildlife, from deer mice to mule deer and from tasseleared squirrels to antelope herds. It has potential for increased numbers of wild turkeys and supports one of the densest antelope populations in New Mexico. An estimated 400 species use the area.

BLM is working on the develop-

ment of a Wildlife Habitat Management Plan for El Malpais. A Habitat Management Plan is used to increase food, water, and shelter for wildlife. Such projects as prescribed burns, water, and seedings may be required to benefit wildlife in a particular geographic area.

El Malpais provides good cover for the animals, but little food and water necessary for survival. The moisture, only about 10-12 inches per year, goes right through the porous lava rock.

The area is also receiving in-

creased use for other resources including livestock grazing, wood cutting, and recreation. Livestock are grazed in all suitable range. Wood cutting for firewood, both authorized and unauthorized is increasing, and the area has been logged for commercial timber in the past.

BLM has been holding public meetings to discuss the Wildlife Management Plan for El Malpais and more public involvement meetings are scheduled for this summer.

RESPECT

—It Can Save Your Life

Photographs and text by
Evaline Olson

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Magazine of the Denver Post.*

IT WAS DARK, cold and unnerving, even as we followed our guide through the tangle of tunnels in one of Colorado's thousands of idle mines—mines chisled out of unyielding rock by sturdy miners who came, pick in hand and burro in tow to "strike it rich!" The grisly tales of lives lost and the agony of futile rescue missions, told to us under a brilliant sun at the mine's entrance, now clomped across our minds with every much-hampered step.

Why anyone would be so foolish as to knowingly trespass in an idle mine with all its hidden dangers was beyond understanding. There is a myth that wealth abounds in these old mines, but fact counters the myth. What gold lies entombed in these granite vaults, somebody else decided wasn't worth the cost of freeing and processing.

Visitors, new residents and

seasoned Coloradans may be tempted to go into "weekend mining" as the value of gold soars. Mining country pundits predict \$1,000 an ounce by summer's end. Silver, copper and other metals will follow suit as international economics and politics add yet another layer of glamour to the age-old cry—"GOLD!"

But, consider some facts before you follow that urge to gather up a grubstake and go after your fortune in an idle mine high in the Rockies, or test your mettle against the courage and the imagination of those legendary Colorado miners.

First, those idle mines are just that. They aren't abandoned. Every year their owners pay taxes on them. If you go onto the surface

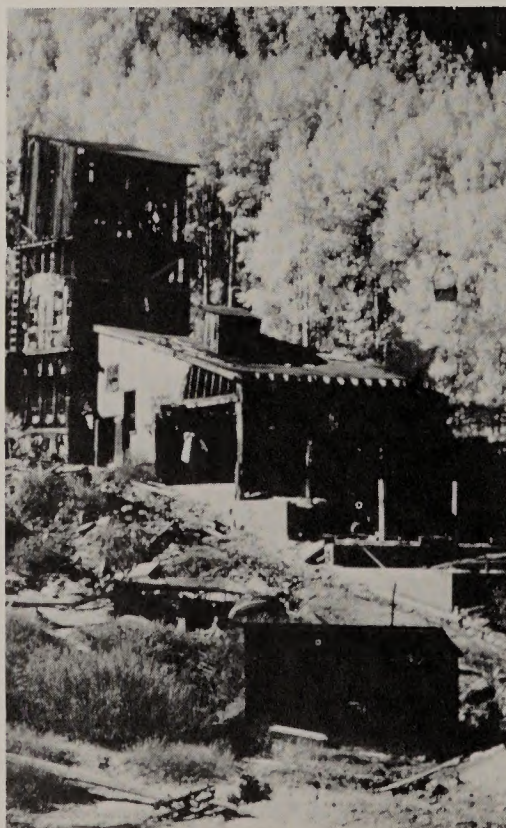
itself, it is illegal—it is called trespass. But worse, if you go onto the land and into the mines, you follow a potentially deadly pursuit.

The unintentional trespasser is in every bit as much danger as the trespasser whose intent is to go into a mine, remove tools, equipment or what is believed to be valuable ore. Picknickers and hikers, probably unaware they are breaking the law, become innocent victims of these mines. Most wouldn't be there if they knew the dangers in what they are doing.

Take the case of a Lakewood, Colo., family on a summer picnic outing in Clear Creek County. The 18-year-old son sat, feet dangling, on the edge of an old mine shaft. Seeing something behind him, he turned to pick it up and started to slide. In an instant he had disappeared. After several hours, inspectors from the Colorado Division of Mines located the boy 180 feet down the shaft. Massive injuries had claimed his life. A family outing ended in needless tragedy.

Late summer and early fall appear to be the times of the greatest numbers of mining accidents, but there are no winter moratoriums. Cross-country skiing and snowmobiling in unmarked areas lead to snow-covered dangers of open shafts. Rotting timbers, now more than a century old, could give way under vibrations of lines of skiers; they could easily collapse under the intense pressure of high-powered machines.

Norman Blake has been rescuing people, animals and lots of vehicles from Colorado Mining Country for





(Left) Weathered remains of the dump track at the Dolly Varden mine high atop Whiskey Flats in the Alma-Fairplay Mining District.

ears. Working shoulder to shoulder with his dad and brothers, Norm grew up in the Colorado mines.

Since 1955 Blake has been a metal mine inspector, district mine inspector and is now the director of the Colorado Division of Mines. That division usually involves itself with the enforcement of mining health and safety statutes and rules and regulations. Since there are few people in the State who have worked in the older mines, Blake's expertise brings the thankless and dangerous job of rescue to him and his crew.

There was one particularly bad rescue mission in which the 400-foot fall inflicted physical mutilation on the victim that was beyond description. Blake remembers: "After working 16 continuous hours, I came to the surface with that unrecognizable piece of humanity and cried uncontrollably for hours." He ended by saying, "The sad part is, it's so unnecessary. Lack of respect for mountain property ownership—that's the common denominator for both the unintentional and the intentional trespasser. When people leave their vehicle on the highway or country road and walk into high country, they're trespassing—someone

owns all of that land. Respect—it can save your life!"

The Colorado Division of Mines recorded a bizarre case of intentional trespass that promised a pot of gold, supposed to be valued at \$3 million dollars, buried in an old mine. The fame of treasure had reached two men in a distant State who knew nothing of mining. No matter, they would come, search out the fortune and steal it. Yes, steal it, since, if it existed at all, it was on privately owned property. Their only technical knowledge came with the mining engineer they brought along, but he was on crutches and couldn't enter the mine.

They dug 25 feet to reach the mine entrance. Inside, their matches went out immediately. The tunnel was full of "white damp," the miner's term for bad air. Better plans were called for. They went in to Denver, bought five bottles of oxygen and masks like those used in hospitals. Neither the bottles nor the masks had use controls, and there was no way to know how much oxygen was left. To carry the bottles, they got backpacks, and, expecting to find water in the tunnel, they picked up a rubber raft. That night they fashioned oars of

peach crate wood found near their mountain motel. Returning to the mine, oxygen bottles mounted on backpacks, they made another illegal entry. About 2,500 feet into the tunnel they found water, inflated the raft and rowed to the other side. In a matter of minutes, the first man's oxygen bottle was empty. There was no oxygen in the tunnel. He died instantly. His companion was running out of oxygen, but alone he couldn't reach the bottle on his back to replace it. He sat down, leaned against the tunnel wall 6,200 feet into the mine and fell into a permanent sleep.

That 82-hour recovery mission endangered the lives of hundreds of men, not one of whom was paid for time nor specialized personal equipment used to bring out the bodies. Norm Blake estimated that, if the taxpayers had to foot the bill for that single mission, it would have cost more than \$200,000, and that was more than 20 years ago.

If you react like most people, you are saying, "That's terrible, why doesn't someone do something?"

There are many things being done, most of which have been only modestly successful.

An old mining law, for example, requires that mines be posted with warning signs such as "Keep Out"



Perched high on Mosquito Pass, above Leadville, Colorado, an idle mill could tempt the curious into disaster.

and "No Trespassing." The miners willingly and profusely comply with this law, but the trespassing public removes signs more quickly than they can be replaced. Many resident miners are trying to protect their property and the public by installing chain link fences around mine openings and setting corner posts in concrete. Those mines being reactivated are fitted with steel plate doors to inhibit intentional trespass.

"That should do it," you say? You fail to take into account the hundreds of reported instances of four-wheel-drive vehicles fitted with winches pulling the posts, concrete and all, from the ground, making

rubble of the fencing and destroying steel doors in frantic attempts to gain entry.

A trespass law, enacted in 1968, carries a fine of \$300 if convicted. There have been a few convictions and fines. It is difficult to apprehend trespassers and obtain convictions, but efforts are being stepped up in anticipation of increased summer travel.

So much for the legal approach to a dangerous problem. After the notorious "buried treasure" trespass recovery operation, Blake considered recommending that all idle mine entrances in Colorado be filled in. After a survey of every shaft in Clear Creek, Boulder and Gilpin counties, he estimated the cost would be at least \$15 million. Multiply that figure by 25 years of inflation, add to that the remaining 60 counties of the State and the cost obviously becomes prohibitive.

A group called Women in Mining (WIM) shares the concerns of

the Division of Mines and the miners. It is an organization of women who, like many old prospectors, are hooked on hardrock and coal mining. They work in the mining industry as professionals, technicians and clerical staff.

They wanted to help stem the tide of mining country destruction and acknowledge the historic values it represents. To do this, a unique idea took form and grew.

Pat Archer is an active WIM member and is on the public affairs staff of the Colorado State Office of the Bureau of Land Management (BLM). She pointed to mixed land ownership patterns in the mountains that include public lands. This gives many people the misconception that idle mines are abandoned public property. That was the beginning of Operation Respect.

Its goal was to provide information to the public about land ownership—what is public and what is private. It would tell of the dangers to be found when trespass occurs in this area born in bravado and built by brawn. School children would have opportunities to learn many things about Colorado's high country and about mining.

They would learn, too, that every time a piece of wood is removed from an old mine building, it is just like tearing a page from a history book. It can never be replaced. Their values are challenged as they look at old wood pillaged from someone's private property and see it for what it is, stolen property. Not just a nice picture frame or paneling in a family room.

Operation Respect had a future but it would take more time, opportunities for exposure, and further than the organization could provide through a committee. It was

Side tunnel in an idle mine pinches out to a cave-in.

then BLM became an enthusiastic partner in a public affairs plan to promote information and education about land ownership and mining country safety.

Return home with only memories

Exercise good judgment

Safety is most important

Protect lives and property rights

Enjoy without destruction

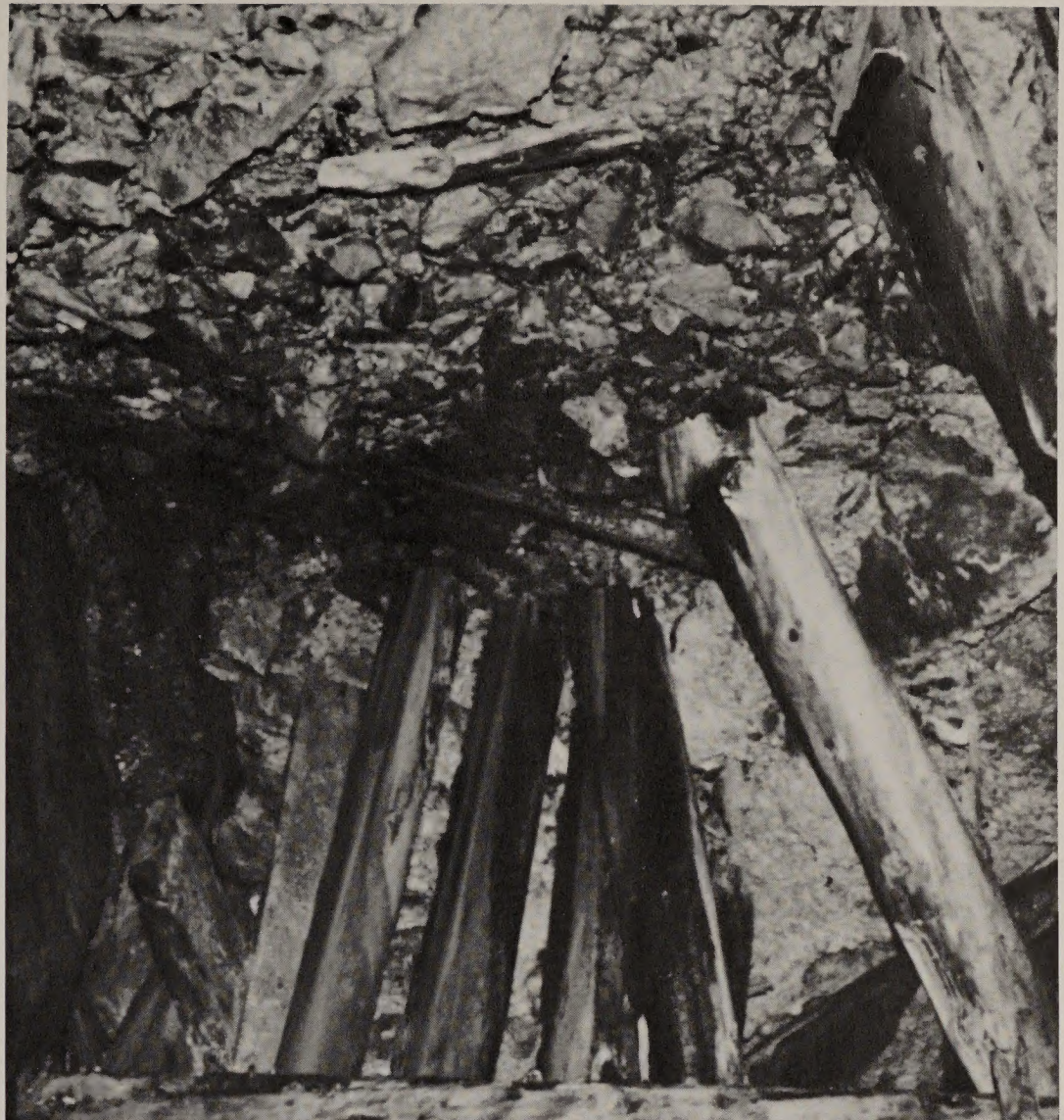
Concern for private property

trespassing is unlawful

The plan was heartily endorsed by Central City Mayor Bill Russell, County Commissioner Van Cullar, several other residents of Colorado Mining Country and Norm Blake, who is an honorary member of WIM. The burro was chosen as a mind-sticking symbol to rouse human interest as well as represent the mining industry. The winning name in the WIM "name-the-burro contest" was WIMSEY (Women in Mining Safety Education Year-round.) Having a name, the burro was visually created by a BLM artist. WIMSEY went everywhere—on brochures, posters and exhibits and showed the same curiosity and concerns as we see in human behavior.

For two successive years, Gov. Dick Lamm proclaimed a spring WIM Week. The first year featured a simulated search and rescue mission. Cooperation of the Colorado Division of Mines, Gilpin County Search and Rescue Group, BLM and WIM produced an impressive media event that came to leisure-time users of Colorado highways at the onset of the busy tourist season.

The second year WIM representatives and young people who met

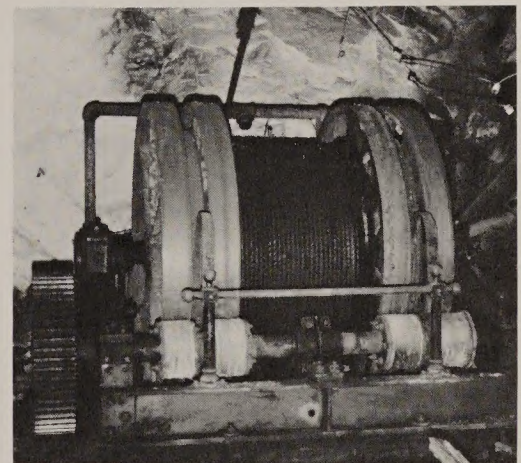


Hoist drum and cables being reclaimed for use in the reactivated mine. Note the electrical wiring and the jumble of timbers to be cleared away.

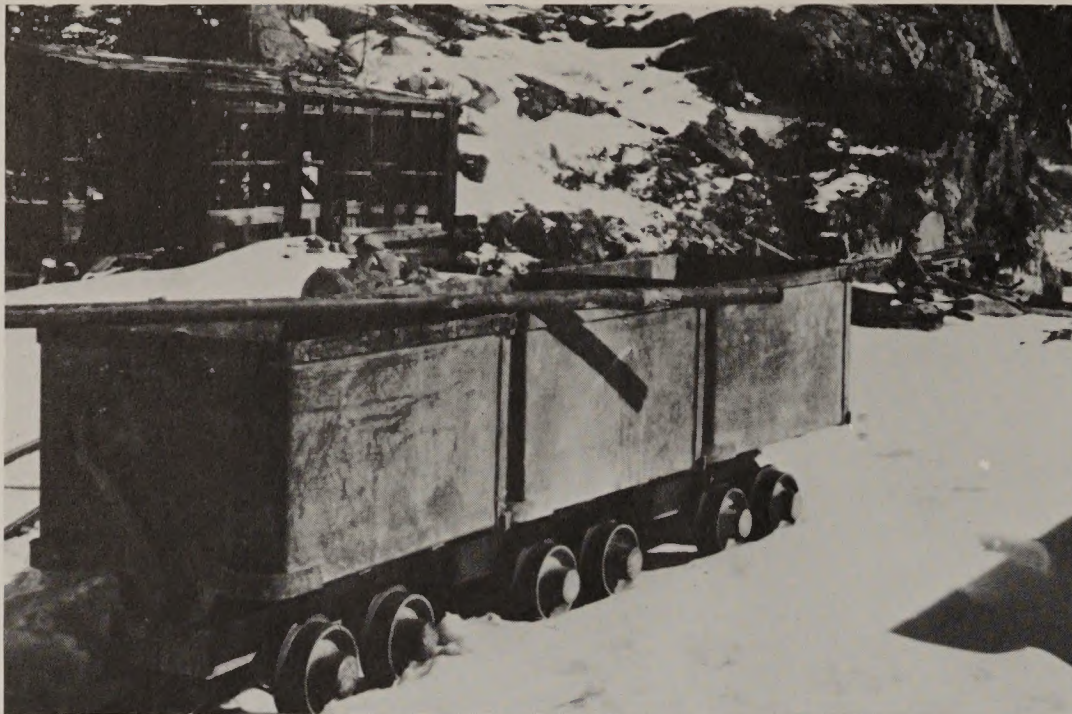
with the Governor on the State Capitol lawn introduced him to a real live WIMSEY. The children shared with Lamm new perspectives about what they and their parents had always thought were abandoned public property—the idle mines of Colorado.

Education in the schools carries RESPECT home to Colorado families, and a professional teaching package is being developed for use in Colorado public schools. In addition, WIM will be placing the first in a series of highway signs near Georgetown to tell about Historic Colorado Mining Country and RESPECT. WIM has developed in-car litterbags, and bumper stickers are planned.

Every year the Colorado Mining Association presents a Health and



Safety Award. Originally nominated for that award, Operation Respect was seen by the CMA's awards committee as distinctive in itself and deserving of special recognition. So far as WIM is con-



The weathered wood has been pillaged from the old mine building and ore cars are a favorite target for vandalism

cerned, when the singular Public Service Award was presented to them, that said it all!

Far reaching as education programs have been, reports of injury and death continue. A 17-year-old California youth on a summer job in Cripple Creek found three old fuses with blasting caps as he climbed down a winze inside a mine. He lit the fuse, held the blasting cap in his hand and in the resulting blast lost the ends of three fingers and a thumb.

A couple visiting in Central City, within 500 feet of the WIM simulated rescue mission site at the Glory Hole, were among the many who come every day in the unintentional trespass. The man stood quietly eating a sandwich as his wife was sketching nearby. Suddenly, without a warning, the hard but deceptively thin crust above the old shaft crumbled to a gaping hole. The only sound was a diminishing outcry as he disappeared. In minutes the Search and Rescue Unit of Gilpin County was there, but the 160-foot fall had been fatal. Once again, the volunteers began the highly dangerous and emotion-charged task of bringing the body to the surface.

Totally unaware that they were trespassing on private property, the widow told Norm Blake, "Had we known that, we certainly would not have been there." She wrote letters of appreciation to the Search and Rescue Unit.

It was hard to believe, but County Commissioner Van Culler told

us: "That is the first time we have ever received a letter of thanks from a family member. Usually, we're verbally abused and sometimes threatened for not doing enough either to protect the trespassing victim, or to save the life already lost."

Mayor Russell is a regular on the search and rescue missions. He added to Culler's comments, "The only other commendation we ever got was for rescuing somebody's dog that should have been on a leash and fell into one of the shafts."

The agony and the desolation that accompanies a mine disaster is clear. That recent trip into a mine being reactivated made a believer out of me. It was safe in our controlled situation with hard hat, safety-approved lights and knowledgeable guides, but to a trespasser it would be a disaster waiting to happen. A wrong turn into a tunnel covered with jagged timbers, made slippery in the muck, rusted nails, twisted track and downed electric cables or, worse yet, one that ends in a water filled shaft could spell tragedy. Dangling fuses of old dynamite charges hung from rock ceilings. So long as left alone, they are harmless, but if disturbed by the uninformed, they could set off sudden explosions and entrapping cave ins.

According to miners, when the public accepts the fact that there are no such things as abandoned mines, there will be fewer tragedies.

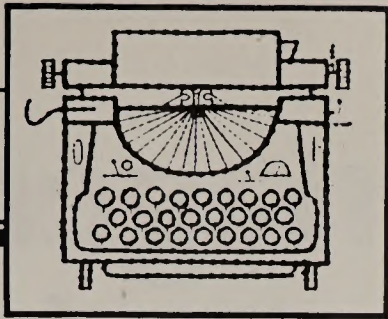
It was hard to believe, but County Commissioner Van Culler told us: "That is the first time we have ever received a letter of thanks

If you want good advice, take it from Blake: "Visitors should keep their pets on a leash and put a healthy distance between themselves and anything that even looks like a mine shaft. It takes just one loose pebble at the top of a shaft to begin your slide—maybe to eternity."

Blake clearly has little sympathy for the intentional trespassers who think they will get rich quick by rediscovering and by stealing gold or other precious metal. "It's just plain foolish; those mines wouldn't be idle in today's economy if you could walk in and bring out pay dirt," he told us. Then for emphasis, he added, "Why you'd have to chisel, muck and tram five tons of hard rock and have access to a mill before you could extract even one ounce of gold."

When you head for the hills and historic Colorado Mining Country, listen to your conscience and to your good judgment, but especially listen to those who know. You'll return home only with memories, but, best of all, you will return home.

Evaline Olson is a Public Information Specialist with BLM's Colorado State Office in Denver.



News Highlights

Range Land Vandalism

Vandalism can be defined as someone having fun at someone else's expense. When it's on public land, the expense goes to you-the taxpayer.

Vern Statler's ranch, five miles southeast of Kingman, Ariz., includes public land administered by the Bureau of Land Management. A portion of the grazing fees Statler and other Mohave County ranchers pay BLM is returned to build range improvements like stock water tanks and windmills.

But Someone decided the windmill on Statler's ranch made a better target for their 22-caliber shells than a way of giving life-sustaining water to his cattle.

Replacing the shot-up pump motor on the windmill would cost \$1800 in parts alone. Since the windmill is a BLM project, it's the U.S. taxpayer who will have to replace the parts. Statler will have to supply the labor.

In the meantime, he'll have to find another way to water his cattle. Coming just as the dry season is beginning, the vandalism may cost Statler more than just wages. His cattle won't be able to graze the area served by the windmill. That will put more grazing pressure on the other parts of his ranch.

Vern Statler's problem isn't unique. It's just the latest, and we all pay for it in higher taxes and beef prices. Also, as the Federal budget shrinks, vandalism diverts money from other badly-needed work.

Expensive 'fun' at any price. Think before you shoot!

Adopt-A-Horse Fee Policy

The nationwide Federally sponsored Adopt-A-Horse Program, which finds homes for excess wild horses and burros removed from western public rangelands, will undergo a major change this fall to make the operation more self-sustaining.

Beginning October 1, BLM will charge a fixed fee of \$200 for a wild horse and \$75 for a burro. The money will be applied toward the actual cost of removing and placing the animals with adopters. Transportation costs, if any, will be additional.

This year, BLM will spend \$4.4 million subsidizing the Adopt-A-Horse Program. The fee system is an attempt at getting the program closer to paying for itself. Presently, the BLM absorbs about \$300 of the cost of capturing and placing each animal with an adopter.

Solar-powered Fence

Space-age technology is helping cut the cost of raising cattle for a Yuma County, Ariz. cattle rancher. Five miles of solar-powered electric fence are being installed on public lands under grazing permit issued by BLM to Keith Pierson of Bouse.

The 12-volt, three-wire fence is electrified by a battery that in turn is charged by a solar panel. Lightweight fiberglass posts support the wires, one of which serves as a ground. The system being installed can electrify up to 17 miles of fence and is an effective way of controlling the movement of cattle.

Materials for the solar fence were purchased by the BLM's Lower Gila-Phoenix Grazing Advisory Board. A portion of the grazing fees BLM collects for grazing permits in each county is available for the use of this citizen advisory group for range improvements in that county.

The Longest Trail

The newly designated North Country Trail, which is over 3,200 miles long, the longest in the world, crosses parts of New York, Pennsylvania, Ohio, Michigan, Wisconsin, Minnesota

and North Dakota. It winds through some of the most scenic areas of the northern tier states.

With Lake Champlain at one end, the trail offers a wide variety of terrain: mountains, farmland, prairie, grasslands, lakeshore and inner forests.

The North Country Trail Association Trail Club is seeking volunteers to help build and maintain the trail in all seven states.

For further information, write the North Country Trail Association, P.O. Box 100, Lincoln Center, Maine 04458 or call Lance Feild, (207) 794-6062

Watch Out for this Critter

BLM Hydrologist, Paul Krupin warns all those who would be tempted to slake their summer thirst at one of Idaho's pure-looking, cool and bubbling streams that they are imperiling the state of their health.

The problem is a microscopic parasite named Giardia (pronounced Gee-ar-dee-a). The little varmit causes a miserable disease called giardiasis which is characterized by diarrhea, intestinal gas, cramps, nausea, weakness, malaise and considerable discomfort. If left untreated, the disease will persist from two weeks to two months.

Serious outbreaks have occurred in Rome, NY in 1975, Camas, WA in 1976, Vail CO in 1977, and in 1978 when 90 Wyoming Boy Scouts were laid low after drinking water from a beaver pond.

Those who think they might have contracted the disease should not try to treat themselves; rather, they should go to see a doctor.

Stream water should be boiled for 20 minutes. No other treatment is 100% effective. All wildland users should exercise proper sanitary care and responsibility - even in the most remote areas.

Fire Management Today ...

By Fred McBride

The graphics computer terminal in the fire dispatcher's office starts to hum. Within minutes it has printed a map showing an area in the northwest quadrant that has been hit by an electrical storm. According to the map, 500 cloud to ground lightning strikes have occurred in the last forty-five minutes. On the map, each strike can be pinpointed by a small cross.

The dispatcher punches a key. Through the wonder of computer science the specific area of interest is isolated and an enlarged map appears on the screen. This map shows roads and towns and their relation to the points that have been struck by lightning. Another key brings related weather data to the screen—temperature, relative humidity, wind speed and fuel moisture from an automated weather station nearest the area. Another key brings a fire behavior prediction to the screen.

Moments after the first hum the fire dispatcher knows the probability of any specific lightning strike starting a fire, how the fire will behave if one does start, and how many acres will be burned over by the end of the first hour.

To use the words of a dispatcher who remembers how it was in the old days, "Fire fighting ain't what it used to be." Fire suppression has entered the electronic age.



The Bureau of Land Management is responsible for the control of wildfire on almost 300 million acres of public land. At Boise, Idaho, BLM has combined forces with the National Forest Service and other Federal agencies to develop and operate a large complex, known as the Boise Interagency Fire Center (BIFC) dedicated to the control of wildfires on Federal land throughout the United States.

Bringing a large forest or range fire—called a project fire—under control is a highly complex and expensive operation. Men and materials are brought from distant points to attack the line of flames. Added to the cost of bringing in men and materials is a substantial

loss in natural resources.

Now the Bureau is testing a new system in Vale, Oregon that will make our opening scenario a reality. If all goes well, the savings in the cost of controlling wildfires will be tremendous.

Using existing lightning detection equipment, remote automated weather equipment and existing fire behavior models, the new system will give fire managers the information they need to make accurate judgments on how to respond to a potential threat of fire.

A high percentage of wildfires are caused by lightning. Once these fires took a natural course, burning over hundreds of thou-

Tomorrow



sands of acres, altering the natural vegetation, and often striking terror in the hearts of man and beast alike. Until fairly recent times, wildfire was considered a natural disaster beyond the control of man. Once started, they burned until fuel supplies were exhausted, or the flames were quenched by rain.

With the growth of cities, uncontrolled fire could bring quick disaster and eventually was seen as an arch enemy of civilized man.

In the light of such fiery disasters as the Great Chicago Fire of 1871 and the San Francisco Fire of 1906 there arose a consensus that all uncontrolled fire was bad.

In the cities, men and equipment were marshaled and organized

into fire brigades to provide quick response to every threat of fire. This philosophy also pervaded the minds of land managers. Here, forces were also marshaled, and whether the fire was in the forest or on prairie grasslands, the objective was to put it out as quickly as possible.

Land management agencies conducted intensive public relations campaigns to enlist public support in combatting wildfires. Smokey Bear became a National symbol and school boys dreamed of becoming smoke jumpers.

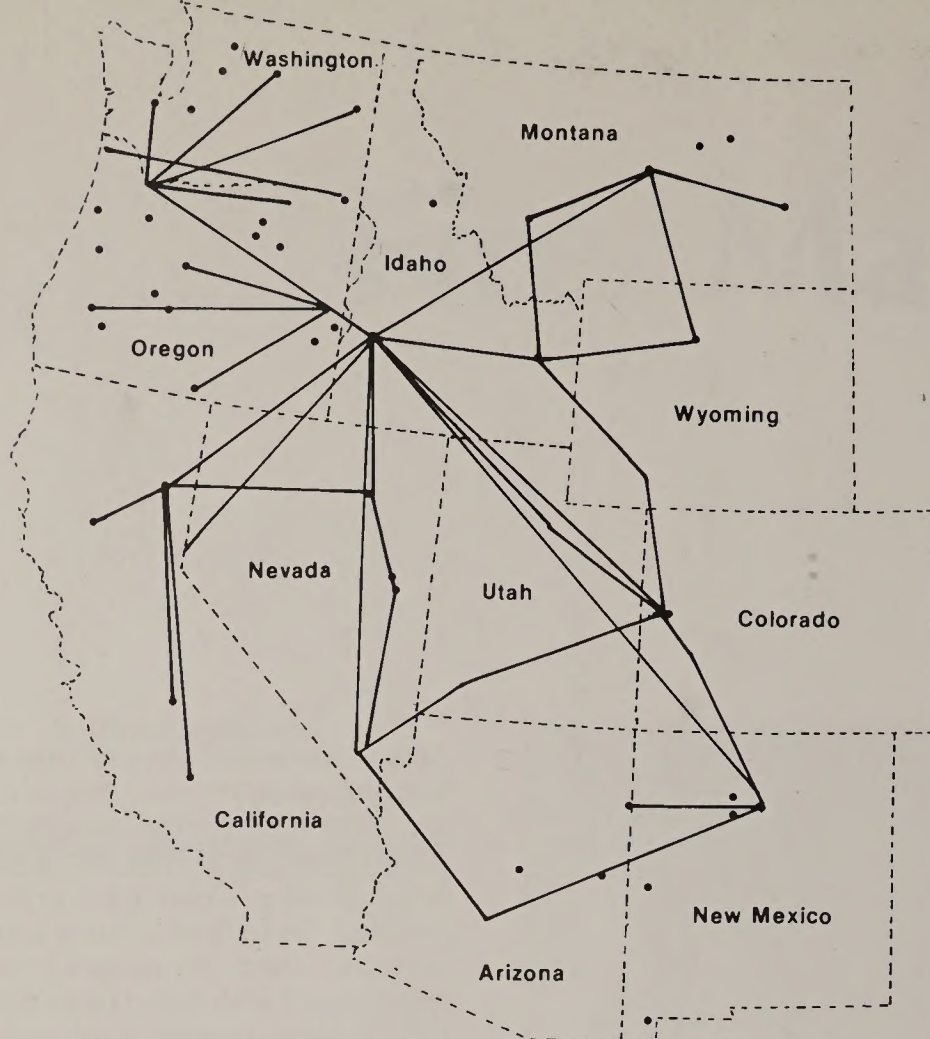
It was not until the early 1970's that land managers and ecologists started to question the concept that all wildfire is bad. Their skepti-

cism was aroused by what they saw happening on the land. More and more they saw pinyon-juniper stands invading grasslands; sagebrush thriving where grass once reached the belly of a horse and park-like stands of timber becoming clogged with fallen trees and thick stands of underbrush and undesirable trees. Gradually it became clear that wildfires had always been a part of the natural scene and played an important role in the ecology of both forests and grasslands.

Some efforts were made to restore the use of fire as a tool in vegetation management. Land managers made limited experiments with controlled burning. Under the most favorable conditions, small areas were allowed to burn. Because of the traditional fear of fire's destructive potential, managers were extremely reluctant

Earth station in Boise, Idaho collects satellite data gathered at the weather station





Locations of Lightning Detection Equipment

in allowing controlled burns to become too large or too hot. However, it soon became evident that such a timid approach was not effective in vegetation control.

In 1974 BLM was still trying to improve on its ability to suppress wildfires and keep burned-over acreages to a minimum. Since a large percentage of wildfires are caused by lightning, the Bureau launched a campaign to enable those responsible for fire protection to detect fires caused by lightning. The objective was to enable dispatchers to get fire crews to the scene of a fire before it had time to get big.

By 1978, BLM had a lightning detection system in place. The system was based on the fact that only lightning striking from cloud to ground causes fires. Since lightning is an electrical discharge, electronic equipment designed to detect such strikes was developed.

The system covers the entire western United States and Alaska. Data on each electrical storm is transmitted to all BLM offices. Data is provided to other agencies on request. The system had been developed rapidly, yet the amount and accuracy of the information it provided was astonishing. So was

the demand for it.

Air traffic controllers wanted the information so they could reroute large jet liners around severe electrical storms. Electric companies wanted it so they could identify probable areas of storm damage. The military wanted to be prepared to deal with power failures. The Severe Storm Laboratory in the National Weather Service needed the information to forecast severe storms and to confirm their forecasts. Meanwhile, fire suppression agencies were getting more information than they could handle, and the number of interested subscribers exceeded the capacity of the distribution system.

The number of lightning strikes far exceeded the Bureau's ability to react. In short, the Bureau was being flooded with an overkill of information and something had to be done if the detection system was to become a viable tool for fire suppression.

Early in 1979 the Bureau began an analysis of what had to be done to make the system work and get the information to those who needed it. From the analysis came a clear picture of the kind of total system needed.

- The system should translate

strike data onto a map and provide for that map to be sent to 52 BLM offices and an additional 1,000 users.

- The system should enable the dispatcher to determine the probability of a given electrical storm or lightning strike starting a fire.
- The system should provide information to enable the dispatcher to determine the behavior of any given fire that does start.

The rationale for the above criteria is based on known facts about wildfire. While lightning is a major cause of wildfires, only a small percentage of lightning strikes actually start fire. Probability is affected by temperature, humidity, wind velocity and the amount of moisture found in grass, leaves, brush and other fuel. When the data received over the computer indicates that the probability of a fire starting is low, the manager can decide not to send fire crews to the site.

As an additional dimension, the new system gives the fire manager the information he needs to use the fire as a tool to manage vegetation. For example, when fire behavior data shows that a given fire will not pose a threat to human life, property or natural resources, the manager may decide to let it burn. In this way, men, money and equipment can be held in reserve for those fires that do pose threats.

When a fire does pose such a danger, the maps show the fire manager the best route to get crews to the fire line. Since the decision to fight the fire can be made within minutes, crews can be on the scene before the flames have time to spread and are still easy to control.

By February 1981 the design for the new system had been refined to the point where the Bureau was ready to test it in the field. It is now in operation in the Vale, Colorado District. With this system, fire management will become more sophisticated, more economical and more effective.

Fred McBride, a forester, is Chief of BLM's Branch of Fire Management, Washington, D.C.

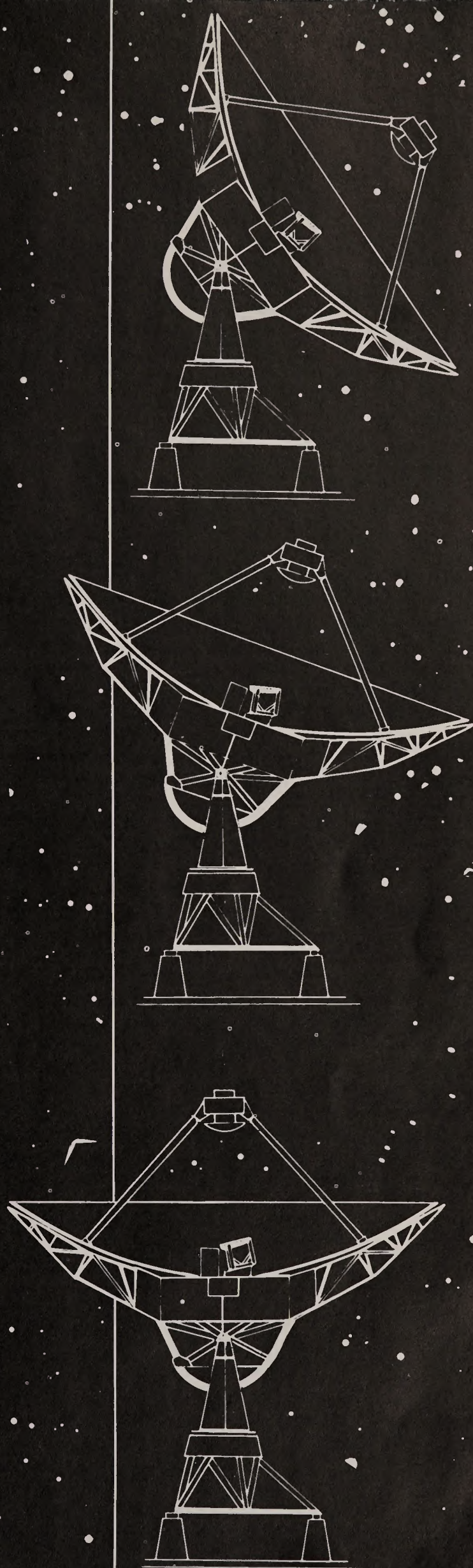
Tuning Into the Universe

World's largest radio telescope probes the stars from the New Mexico desert

By Connie Babb

Since 1975 astronomers have been trekking to the vast desert of public lands near Socorro, New Mexico. The attraction is not the dry desert weather, wildlife, solitude, or recreation. They come to listen to the universe via the world's largest radio telescope, a \$78 million collection of 27 antennas known as the Very Large Array (VLA).

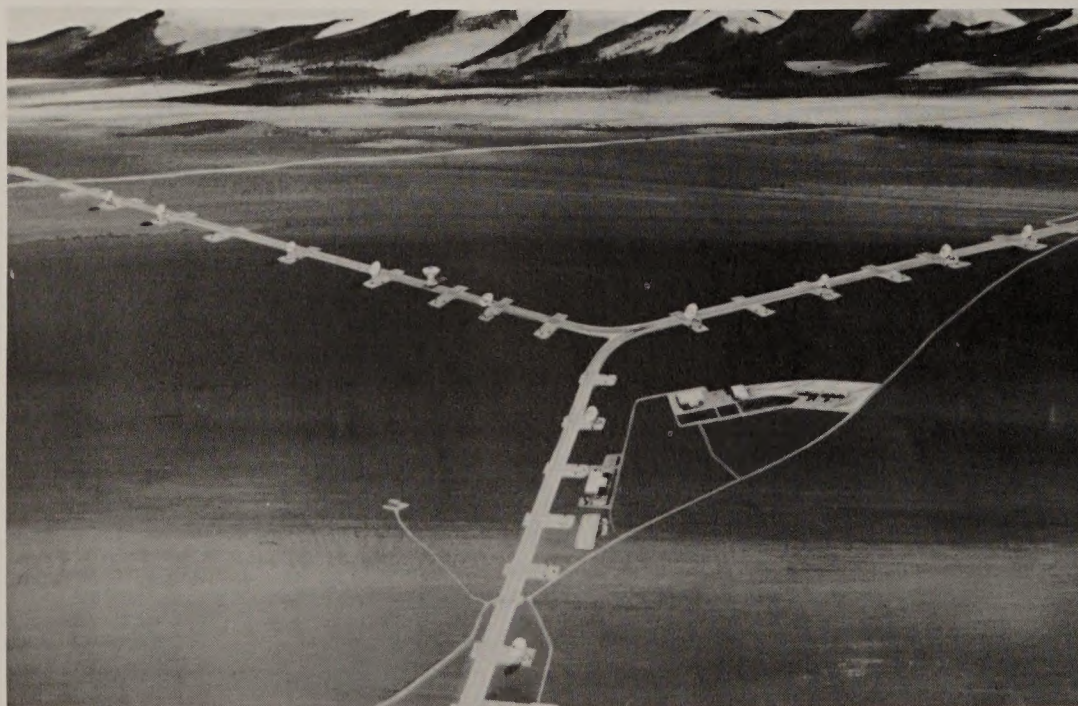
Man has been viewing the stars for many thousands of years. But, only recently has he been listening to them. What lies beyond the limits of the universe? The universe is full of surprises, and this new generation of astronomic tools has already revealed some of these. Expanding man's view of the universe, the VLA will be used to study the moon, the planets, the sun, near stars, our galaxy, distant galaxies and the most distant quasars.





The VLA is constructed in the remnant of an ancient lake bed. The facility does not interfere with the scattered herds of cattle that graze on grass and sage. (Photo courtesy of NRAO.)

Artist's rendering of the VLA. The VLA is part of the National Radio Astronomy Observatory (NRAO), one of five national astronomy centers funded by the National Science Foundation (NSF). (Photo courtesy of NSF.)



These giant ears listen to the universe through the stillness of the New Mexico desert.

As you drive through the Magdalena Mountains, the antennas loom large and dwarf cattle farmers' windmills and barns and even the two-story VLA operations facility itself. It has even become an attraction for airline passengers when their pilots become tour guides while flying over the area.

The broad valley of public land near Socorro was chosen for the site of the VLA by the National Radio Astronomy Observatory for a number of reasons. Topping the list is the high altitude, offering minimal atmospheric interference and relative freedom from extreme winds; the southerly latitude, which permits observation of about 75 percent of the sky; and the absence of man-made electrical interference.

It would be impossible to construct one giant antenna strong enough to receive the signals scientists need to study space. The VLA's collection of antennas work together, gathering signals as if they were one colossal, giant antenna, picking up radio signals that have been impossible to detect before.

Every particle of matter in the universe, whether a mass of stars or a strawberry patch radiates highly energetic electrons at radio frequencies. These electrons can be picked up by radio receivers.

A radio telescope such as the VLA differs from the optical type in that it collects radio waves, as opposed to the much shorter light waves. Radio telescopes use antennas and radio receivers to receive radio waves; optical telescopes use mirrors or lenses and photographic plates along with the human eye.

During the past half century, radio astronomy has become big science and radio telescopes have grown to enormous size, but, nowhere more enormous than on this New Mexico desert. Although not completed until early this year, the VLA has been humming with scientists, engineers, technicians and astronomers since the first antenna was in place in 1975. The completed project now spreads out in a Y along 38 miles of railroad

track and is linked underground by microwave channels to a central computer. Each of the 27 antenna is 82 feet in diameter and weighs 210 tons. Designed to operate in winds up to 40 mph, it can survive gusts up to 110 mph. The antennas rotate full circle horizontally and can sweep vertically almost from the ground on one side to over one-third of the way to the ground on the other. As the earth spins, the Y configuration of the VLA spins with it. The railroad tracks are used to transport the huge antennas to and from any one of the 72 antenna observing stations distributed along the arms of the Y.

The amount of the sky VLA views at any instant may be varied by moving individual antennas along the Y-shaped track into position at any one of these observing stations. In this way, the VLA gives radio astronomers the radio equivalent of a zoom lens.

The radio waves received from space are so diminished by the great distances that the trick is to differentiate the signal from the noise a radio receiver itself makes. With the help of computers, the astronomer can keep track of these signals. Observation periods of several hours duration are necessary in order to differentiate weak radio signals from background noise and to take advantage of the earth's rotation.

While the rotating earth continuously changes the orientation of the VLA with respect to a given radio wave source, the Y shape of the VLA and the exact antenna spacings along each arm of the Y compensate for the movement.

Until the VLA, radio telescopes have been less than adequate, going back to 1932 when the first solar radio waves were actually discovered. Greater resolution and sensitivity, such as that accomplished by the VLA, have always been major goals of radio telescope designers.

Radio waves emitted by the celestial object strike the primary parabolic reflector (surface of the antenna), are focused and sent to a receiver under the surface of the dish. The receiver converts the radio waves to an electrical signal and amplifies it more than 1,000,000

times.

The computing equipment is composed of two integrated systems. One monitors and communicates with the array, warning the operator of any problems while an observation is in progress and collects and arranges massive amounts of data. Roughly 100 million bits of information are received during an eight to 12 hour run.

The second system is capable of

radio pictures comparable in detail to photographs made with large optical telescopes, only from far greater distances.

Nature has produced much that is yet beyond our understanding and even beyond our imagination. Astronomers are excited about the possibilities of this astronomical laboratory. They believe that it will eventually help resolve many mysteries—pulsars, quasars, black holes, the geometry of space. The

The VLA's 27 steerable concave telescopes—each 82 feet in diameter—are distributed along three arms consisting of railroad tracks in the shape of a Y. There are 120 degrees between the arms, two of which are 13 miles long and the third 11.8 miles. At full extension, the VLA gives the same results if a single radio telescope 21 miles in diameter were used. (Photo courtesy of NRAO.)



performing the extremely complicated mathematical manipulations necessary to produce a celestial source map. The light and dark areas of the resultant radio pictures correspond to the strength of the radio signals received in much the same way as a picture produced on a television set. It is a "time-sharing" machine which can handle up to 24 jobs simultaneously.

Data can be transferred to another computer in the graphics area for further processing by the image system. At this stage the astronomer is able to graphically display his basic data so as to highlight its most interesting facts. By changing colors or levels on display screens, the astronomer is better able to distinguish and interpret features of the radio source gathered by the antenna. The ultimate goal is to produce high quality

mind labors to grasp the possibilities of studying quasars, billions of light years back in time, flying apart at speeds greater than light, radiating as much light and as many radio waves as entire galaxies. Learning more about them could solve many riddles about physical conditions at the birth of the universe, what it was really like billions of years ago and how it evolved.

The VLA is enabling scientists to probe the universe and pursue answers to mind-boggling questions yet to be thought of.

Can the VLA, as astronomers predict, really see to the very limits of the universe? The VLA may be a promise, beyond imagination.

Connie Babb is a Public Information Specialist in the Office of Public Affairs, Bureau of Land Management, Washington, D.C.

Speaking Out on Regulations

It's Your Right to be Heard

By Paul Herdon

Each year the Department of the Interior issues a great many regulations, both proposed and final. These are published in a daily publication called the *Federal Register*. A portion of these regulations pertain to the public lands administered by the Bureau of Land Management (BLM) and have an impact on the way you and other Americans can use and enjoy the public lands.

Needless to say, no single set of regulations pleases everyone and probably every individual, including Bureau personnel, finds at least some of the public lands regulations objectionable. If you happen to be one who has recently become aware of some regulation you do not like, you may wonder who makes the regulations, why and how they are made, and above all, what you can do to influence regulations that affect your use of the public lands.

All regulations are authorized by Congress or Executive Orders issued by the President. Once a law is signed, or an Executive Order has been issued, Federal agencies may have to prepare regulations in order to describe how it will be put into effect. This process contains the procedures for implementation of the law or Executive Order.

It is impossible for Congress or

the President to specify or even predict the day to day decisions that arise in connection with laws and Executive Orders.

For this reason, these documents usually state broad principles. Appropriate Federal agencies handle the details of when, where, who, and how as it relates to the enforcement of the law. Let's take an example:

Suppose Congress passes a law that requires a fee for certain uses of the public lands. If the law stops there, it becomes the responsibility of BLM, which has been delegated most responsibilities for managing the public lands, to fill in such details as: how much the fee will be; who is authorized to collect it; when and where it will be paid, and what will constitute proper proof of payment. The answer to all of these questions will be set out in implementing regulations.

This does not mean that the agency can be arbitrary or capricious in its rulemaking. Actually, the process of rulemaking is, itself, regulated by law. The Administrative Procedures Act sets out guidelines that every Federal agency must follow in drawing up its regulations.

Once regulations are adopted, they become legally binding. The Administrative Procedures Act

requires that all regulations be published in the *Federal Register* and be codified under the appropriate Title of the Code of Federal Regulations. Title 43 of the Code of Federal Regulations contains the regulations relating to the public lands.

If the regulations constitute a significant action that will have public impact—restricting the way public lands can be used is one kind of significant impact, opening up new opportunities for use would be another—they are first published in the *Federal Register* as “proposed rule-making.” This is your opportunity for input. At the time the proposed regulations are published, the public is invited to submit comments. In some instances the Department may hold public hearings to encourage public comments, criticisms and suggestions. It is at this time that you or your organization can have the greatest impact on the final outcome. But to have that impact you should keep certain things in mind.

How effective your comments will be depends on both the comments you make and the manner in which they are presented. Well thought out comments presented in a coherent, well organized letter can be highly effective.

First, your comments must be

submitted within the time provided in the *Federal Register* notice. The notice will state how long you have to submit your comments. Second, your comments should be addressed to the proper person. This person is also identified in the *Federal Register* notice.

You should remember that once law or Executive Order has been adopted, the Department has no choice about compliance. Those who write to debate the merits of the law should address their remarks to Congress. Your comments should be specific, where appropriate, provide supporting information. In most cases when you do not agree with a portion of the regulations, you should offer alternatives.

You should also remember that your comments are among many. A feature of the proposed regulations that you disagree with may please others. Your comments may be rejected.

Still, there have been cases where portions of regulations have been significantly altered or even deleted because of a single letter. In some cases, persuasive opposition has led to a complete rewrite of regulations. An agency does not, however, have the option of changing substantive law by its regulations.

How can you find out about regulations that are being proposed? One way is to subscribe to the *Federal Register*. The *Federal Register* is published by the General Services Administration. Subscription requests should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. A full year's subscription will cost \$75 and the charge for individual copies is \$1.00.

Copies of the *Federal Register* are available in all Government Printing Office Depository Libraries, located in most major cities.

In addition to the *Federal Register* notice, the Bureau issues national or local press releases announcing proposed regulations that affect the public lands. However, the Bureau has no way of insuring that such press releases will appear in your local paper.

But, suppose your problem lies with regulations already adopted by the Department? Is there anything that can be done to change these regulations? The answer is "yes", although this kind of change is more difficult to effect. You do have the right to petition the Department or the Bureau for repeal or amendment of the offending regulations. Your petition may get results if you can show that the

regulations do not implement the law and are inconsistent, excessive, unnecessary or otherwise contrary to the public interest.

You also have the right to petition the Department to issue regulations if you believe that additional regulations are needed to implement the law. Your right of petition is set forth in section 4(d) of the Administrative Procedures Act. Departmental regulations setting out your rights to petition for change in existing regulations are found in Title 43 of the Code of Federal Regulations, Part 4: 14-1.

All comments received in response to an invitation to comment on proposed regulations are responded to in the preamble to the final rulemaking, if one is issued. In addition, all comments are kept for a period of time in the appropriate Bureau office. You may examine these comments to see how your comments relate to others received and how all relate to the regulations ultimately adopted by the Department.

Paul Herndon is a Public Information Specialist in BLM's Washington, D.C. Office of Public Affairs

The Importance of Utah's Waters to the Future of Our Wildlife was the theme of an essay contest held this spring for high school students in BLM's Richfield District in Utah. Held in conjunction with the 1981 National Wildlife Week, the contest was co-sponsored by the BLM District Office, Fishlake National Forest and Utah Division of Wildlife Resources.

During the month allowed for preparation of the essays, BLM and Forest Service wildlife specialists visited local schools to generate ideas and discussion concerning the contest theme. Students competed for cash awards donated by local and regional sports and wildlife organizations, including the Utah Chapter of the Wildlife Society, Bonneville Chapter of the American Fisheries Society, Blackhawk Musslers, Leval Wildlife Federation, Sevier Wildlife Federation, Gunnison Wildlife Club, Sanpete Fish and Game Club, and the Southern Utah Chapter of the Society for Range Management.

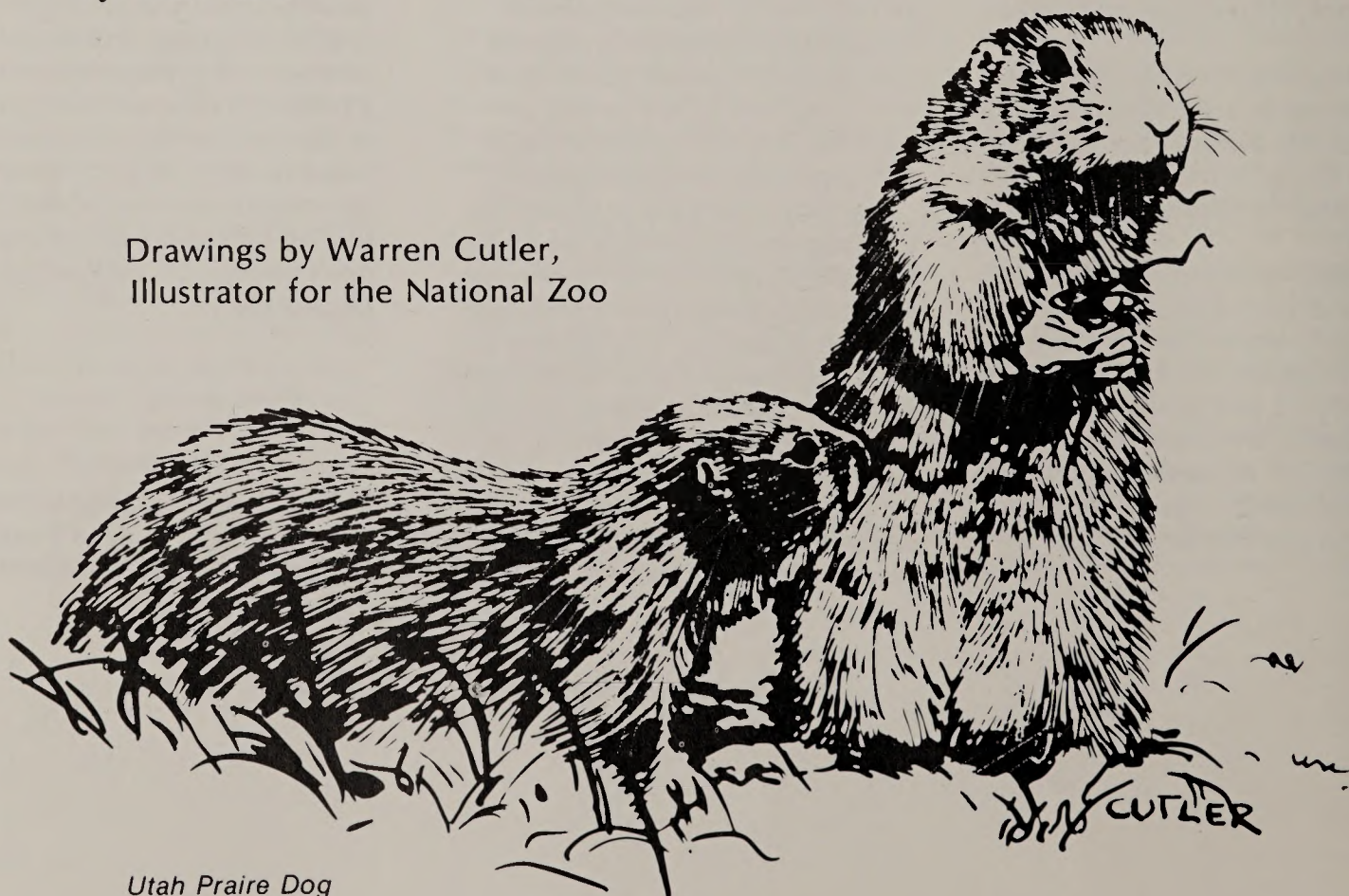
The winner was selected by a panel of seven judges from the agencies and donating organizations.

The winning essay by Elmer Giles, a Junior at South Sevier High School, Monroe, Utah is printed here, unedited. Giles received \$75.00 for his efforts. First, second and third place winners spent a day in the field with local Utah Division of Wildlife Resources conservation officers and BLM specialists to view on-the-ground examples of wildlife management issues.

The Importance of Utah's Waters To the Future of Our Wildlife

By Elmer Giles

Drawings by Warren Cutler,
Illustrator for the National Zoo



Utah Prairie Dog

The importance of water for the future of our wildlife concerns each and every one of us in one way or another. No matter what happens to our water it will affect us, whether it is for the good or for the detriment of our wildlife. If we take care of our streams, lakes, and our marshes, the animals will last a long time to come, but if we don't manage our water wisely it could mean the end of our wildlife as we know it today.

I'll start out by discussing one of the most dangerous areas that affect our water and wildlife, and that is water pollution. Water pollution is one of the most common things that people inadvertently do to destroy the water quality. This can potentially kill many animals and destroy their natural habitat. In some cases deer or other animals drink out of a polluted stream or lake and the pollutants enter the intestinal tract and starts the process of affecting their digestive system or other parts of their body and produces a weakened animal that is unable to survive the stresses of survival. These pollutants can also affect the heart and lungs of the animal and eventually can lead to its death. It affects the fish and ducks of our State. The way it affects the fish is that the fish eat some of the plants under water and they also eat the things that we throw into the water because we're too lazy to take them home. Several year ago a large goose was found at Flaming Gorge with a plastic ring from soft drinks around its neck. The goose had apparently been attracted by the plastic floating in the water and stuck his head through the ring. The ring eventually tightened up and the goose starved to death. Any fisherman has cleaned fish only to discover silver pop tops in their stomachs.

When a minnow gets sick because of the junk in the water, a bigger fish may eat the minnow and he gets sick too and then he dies. Many times when a fish gets sick he doesn't die right away, it takes a long time for the trash to kill him. Fish are tied to their environment and can't just pack up and move. When the conditions reach a point that the fish can no longer survive he will eventually

die. It is the responsibility of each citizen to eliminate pollution.

Herbicides and pesticides along a river or other body of water may do irreparable damage to an aquatic animal. Strict controls should be used in protecting our watersheds.

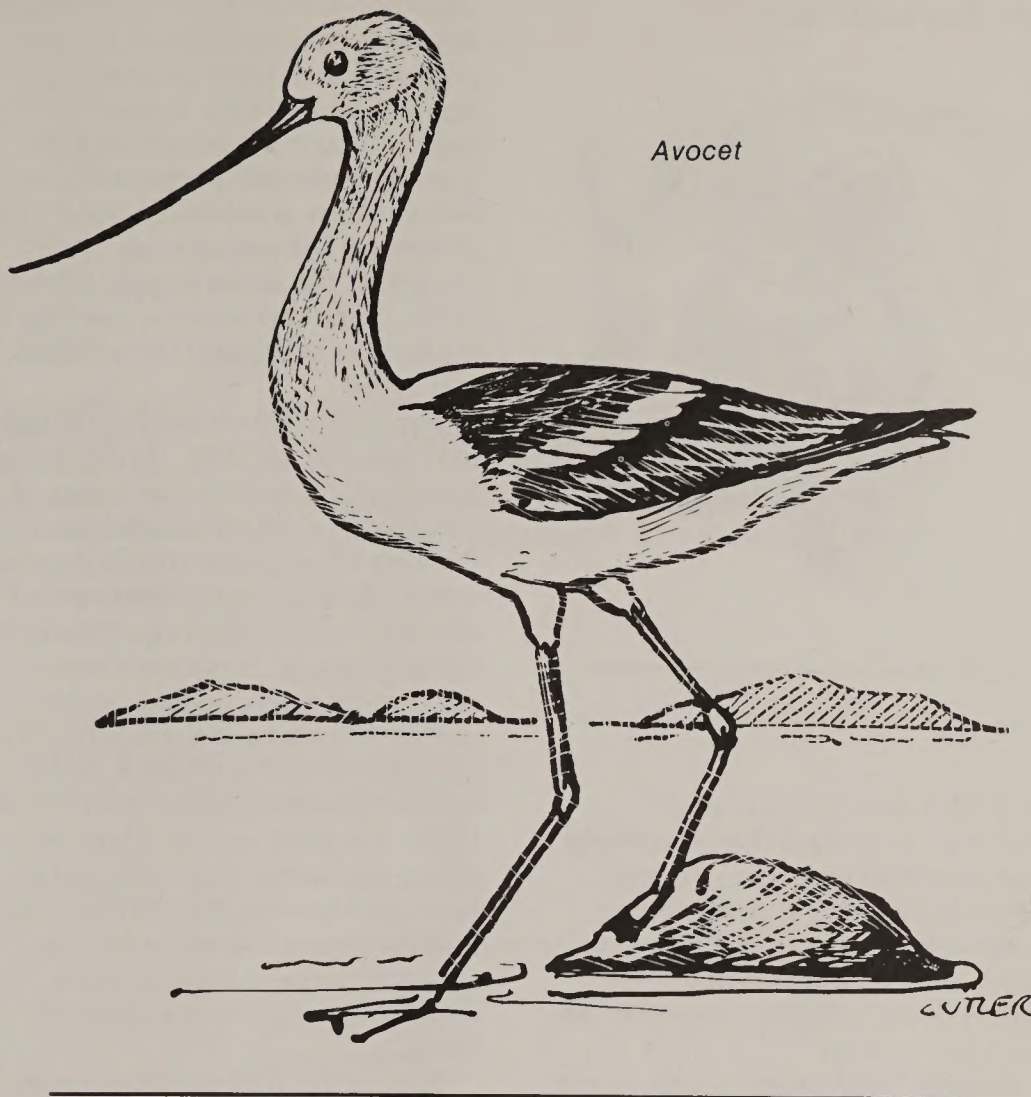
Overgrazing areas and ultimate damage to the watershed is an increasingly important problem if livestock are not controlled so that damage to the stream sides are protected. Silt washes into the water as the walls deteriorate from the animals and subsequent lack of vegetation to protect it. Many fish are unable to spawn or breathe if the silt level becomes too high.

Off-road vehicle use by four-wheel drive vehicles and logging can also cause a deterioration of the watershed.

Waterfowl are also affected by pollutants in the water. Many types of ducks and geese depend on fish as a staple of their diets. If the water is unable to sustain fish then it will

also be harmful to the waterfowl populations.

Another pollution problem is a result of industries disposing raw sewage into the water. This directly affects the rivers, lakes, streams and marshes. The factories dump their wastes into the water. Many of these wastes are toxic to aquatic life. Moreover, the temperature of the waste waters that are returned to the water are frequently so high that they raise the overall temperature of the water. This is called thermal pollution. Many types of fish are unable to spawn if the water temperature is not within a certain range. A good example of this is the trout. The chemicals in the water poison much life and increase the growth of some types of algae that rob nutrients from the water. After a while it kills a large proportion of the fish and other animals that utilize the water. A good example of this problem is the Geneva Steel Mill and its effect



Avocet

American Brown Bear



on Utah Lake for many years. Closer to my area is the household pollution that went directly into Fish Lake. Pollution controls are extremely costly but the only alternative may be the eventual elimination of our wildlife, and who can put a price on it?

Beaver dams create ponds which act as fire guards in our forests. In spite of the fact that beaver dams can cause problems by creating flooded roads, crop land, or timber areas, I feel that the dams are beneficial enough to offset such problems. It wasn't too long ago that the beaver was in danger of becoming extinct. Now, thanks to careful management, the beaver is successfully making a comeback. Beaver dams create ponds which are homes for fish, water birds and other wildlife. Different agencies spend a lot of money constructing fish weirs when the beaver can happily do almost the same thing. Beavers can help provide flood control and conserve water. They keep soil from washing away. Beaver can be managed scientifically so that they do good in preserving our water instead of being problems.

Utah is very dependent upon its water supply in the mountains. Our average water gained through precipitation is very limited and during the last few years we have seen several times when a year of low

rainfall caused near drought conditions. Much of Utah's agriculture depends upon irrigation. As the population of Utah increases so does its demand for water. The hydroelectric power plants and fossil fuel electric plants both use tremendous amounts of water. The proposed MX project can't help but affect the water supply of the State. Once this water is used up it is gone for good and the wildlife will suffer.

Stagnant water is another thing that kills our wildlife. This stagnant water affects mostly our ducks. It kills them in a slow painful way. Poisons are often found in stagnant water, the fish population can not survive and the plants go through many changes. Stagnant waters encourage the breeding of mosquitos that make life miserable for both humans and wildlife. Many types of fish depend on particular types of insects such as mayflies, gnats, and other water bugs as a source of food in their diets. Water quality affects the reproductive cycles of some insects and ultimately the wildlife that depends on them.

Vegetation is dependent upon the water in a particular area. Trees,

grasses, shrubs and other types of vegetation provide sources of food for most wildlife. If there is no water available, the vegetation dies and the habitat and sources of food disappears. If deer and other animals do not have adequate breeding areas, nurseries for their young, and sufficient food, then naturally the population will be affected. A deer that is weak from lack of food is more susceptible to parasites, diseases, and predators. Its young will be weak and the new crops will be much smaller.

I really enjoy hunting and fishing and can't wait for the opening day each year. But even if one isn't an avid hunter or fisherman, who can deny the beauty of a doe and her fawn bounding across the road in front of you, the sight of a flock of geese honking their way across the autumn sky, or the thrill of a young child catching its first fish? It's up to each one of us to make sure that these things are still here tomorrow, next year, and for many years to come. The future of Utah's wildlife is intimately intertwined with Utah's water. They can not be separated. Tomorrow is too late to get started with protecting the water. Let's start today.

Beaver



Public Land Sales

Tracts of public land are sold by the State Offices listed on this page. Sales are held only when land use planning indicates that the public interest will be better served by disposal of the tract in question. In light of the time involved in preparing, printing, and distributing this publication, it is impossible to report on all sales far enough in advance to give most

readers an opportunity to participate. However, notices of sale will be published in the Federal Register and in local newspapers serving the community where the land being offered is located. These notices will appear at least 60 days before the sale.

STATE OFFICES U.S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

ALASKA:

701 'C' Street
Box 13
Anchorage, AK 99513

ARIZONA:

2400 Valley Bank Center
Phoenix, AZ 85073

CALIFORNIA:

Federal Building, Room E-2841
2800 Cottage Way
Sacramento, CA 95825

COLORADO:

Colorado State Bank Building
1600 Broadway
Denver, CO 80202

STATES EAST OF THE MISSISSIPPI RIVER, PLUS IOWA, MINNESOTA, MISSOURI, ARKANSAS AND LOUISIANA:

Eastern States Office
350 So. Pickett St.
Alexandria, VA 22304

IDAHO:

Federal Building, Room 398
550 West Fort Street
P.O. Box 042
Boise, ID 83724

MONTANA, NORTH DAKOTA AND SOUTH DAKOTA

222 N. 32nd Street
P.O. Box 30157
Billings, MT 59107

NEVADA:

Federal Building, Room 3008
300 Booth Street
Reno, NV 89509

NEW MEXICO, OKLAHOMA AND TEXAS:

U.S. Post Office and Federal Building
P.O. Box 1449
Santa Fe, NM 87501

OREGON AND WASHINGTON:

729 N E Oregon Street
P.O. Box 2965
Portland, OR 97208

UTAH:

University Club Building
136 East South Temple
Salt Lake City, UT 84111

WYOMING, KANSAS AND NEBRASKA:

2515 Warren Ave.
P.O. Box 1828
Cheyenne, WY 82001



BLM Library
Denver Federal Center
Bldg. 50, OC-521
P.O. Box 25047
Denver, CO 80225



OFF-ROAD VEHICLE RECREATION

In the fast-paced, steel and concrete-covered world that many Americans live in today, wise use of leisure time is important. We have more time for recreation than ever before, and we want more out of it. For millions of Americans, that recreational experience is motorized, through the use of off-road vehicles, or ORVs for short.

ORVs such as dunebuggies, motorcycles, trucks and campers can make your recreational experience exciting and enjoyable, but without wise use they can also be dangerous, cause damage to the resources you're there to enjoy, and cause problems with other recreationists.

Some tips on safe and sound ORV use on the public lands are found in a new publication by the Bureau of Land Management called *Off-Road Vehicle Recreation*. The 28-page, full-color brochure includes information on recreational opportunities, land use planning, an ORV trip planning guide, ideas on safety, an ORV user's code of ethics and other valuable details.

Copies are available for \$3 each from the Superintendent of Documents. Please use order stock number 024-011-00115-8.

Enclosed find \$ (check or money order payable to the Superintendent of Documents). (Please do not send cash or stamps.)

Please send me COPIES OF **Off-Road Vehicle Recreation**, at \$3.00 per copy.

**Please charge this order
to my Deposit Account**

Deposit Account Number

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OPNR
..... UPNS
..... Discount
..... Refund